Chapter

11

INDOT 2030 Long Range Transportation Plan

Planning and Fiscal Analysis

Overview

The update of the 2030 Transportation Plan provides for the integration of the Major Moves Program for 2006 to 2015 into the 23 year horizon period of the long-range planning process. The plan update provides for the application of a planning process similar to that used in the Major Moves Program for developing the projects for the 2016 to 2030 time period. The Major Moves Program planning process and scoring criteria has been described in Chapter 10. The update of the 2030 Plan for the 2016 to 2030 time period incorporates this planning approach by:

- Using a data driven analysis process to score long-range plan projects on congestion relief and system importance to assign project priorities;
- Estimating future projects costs based upon recent INDOT construction pricing and inflating future costs to the "year of construction" to provide more realistic costs;
- The development of new long-range fiscal forecasts which better account for current economic conditions; and
- The sequential application of the priority projects to the estimated available funding by implementation period for 2016 to 2020, 2021 to 2025, and 2026 to 2030 to identify "funded" long-range plan projects.

The initial identification of the pool of proposed transportation improvements is based upon an analysis process that begins with the identification of highway system deficiencies both in the system-wide analysis of overall needs and in the specific location of problem areas (as outlined in Chapter 7, Highway Needs Analysis). Also the policy framework of the Statewide Mobility and Regional Corridors and their role in providing high speed, long distance inter-city connectivity provided a focus for plan development for intercity corridors. Potential projects are also identified from current planning documents (such as the MPO plans and the INDOT production schedule), and the on-going INDOT planning programs of the statewide interchange study and other planning studies. This chapter outlines the planning analysis conducted in transitioning from the identification of highway needs to the development of a phased statewide implementation plan of specific proposed transportation improvements. This process is based upon a variety of planning inputs, some based upon quantifiable analysis, some based upon expert review by key transportation stakeholders and planning partners at a series of consultation meetings, and some based upon planning and engineering judgment. A key element in the process of developing the phased implementation plan is the consideration of future revenues and the application of fiscal constraint. The result of this process is the development of the proposed transportation improvements in Chapter 13.

Identification of Deficiencies and Needs Analysis

In the identification of highway system deficiencies and needs described in Chapter 7 Highway Needs Analysis, the analytical tools of the statewide travel demand model and the HERS_ST_IN needs analysis model provided information on both the identification of needs plus their priority. In developing District and MPO level maps and the listing of potential transportation improvements, the identification of the

priority of the improvement and the severity of the deficiency were important inputs into project development. For each District, a map was prepared of the forecasted future year 2030 volumes and a determination of future year level of service. In rural areas, level of service "C" was selected for deficiency identification. In urban areas level of service "D" was selected for deficiency identification. This information was supplemented by the output of the HERS_ST_IN needs analysis program which specifically identifies proposed added travel lanes projects by a five year improvement phase and benefit/cost ratio. System deficiencies were discussed as part of the early consultation process. These meetings with the INDOT District Planning Offices, the MPOs and RPOs over the plan development period provided for the review of system deficiencies from both the statewide and MPO models.

Long Range Project Scoring

The statewide travel demand model and its supporting roadway network database supplied the majority of information used for the scoring of projects for the 2016 to 2030 timeframe. The long-range plan analysis used a similar process (but simplified to fewer scoring criteria) than used in the Major Moves Program for scoring. The long-range plan process was a condensed version in that less information was available on the projects in the longer term 2016 to 2030 than was available for the near term 2006 to 2015 time frame. The analysis focus was on information from the statewide travel demand model for congestion relief, system classification and usage data (auto and truck volumes) to determine importance to the system and an evaluation of project priority by the long-range planning section district planning liaisons. Information on factors such as safety and economic development were not available and not considered in the evaluation. The long-range project scoring process provided for a maximum score of 19 with the following criteria being used:

Congestion Relief

This category provides performance information as it relates AADT, Volume to Capacity (V/C) Ratio, and Level of Service (LOS) as discussed in further detail below. Up to 15 points were assigned based on the projects ability to improve performance.

- AADT Volumes – Annual Average Daily Traffic volume. Traffic is averaged over the entire length of the project. AADT break points and scores will be based on year 2000 auto and truck volumes. (See **Table 11-1**)

Truck ADT	Points	Auto ADT	Points
>5400	2.5	>72000	2.5
4201 - 5400	2	56001-72000	2
3001- 4200	1.5	40001- 56000	1.5
1801- 3000	1	24001-40000	1
1201-1800	0.5	16000-24000	0.5
0 - 1200	0	0 -16000	0

Table 11 - 1

- Volume to Capacity Ratio (V/C) –A performance measure of a road's congestion level calculated by dividing the total traffic volume (AADT) by the capacity of the facility. Lower V/C ratios provide various environmental, economic, and safety benefits: improved quality of life, air quality conformity reductions in urban areas, reduced travel

V/C Ratio	Points	V/C Ratio	Points
>=1.51	5	0.94-1.04	2.5
1.35-1.50	4.5	0.85-0.94	2
1.25-1.34	4	0.75-0.84	1.5
1.15-1.24	3.5	0.65-0.74	1
1.05-1.14	3	0.55-0.64	0.5

Table 11 - 2

time, reduced fuel consumption, and reduced time loss to business. For this very reason, projects located on highly congested facilities will generate a greater proportion of points. (See **Table 11-2**)

- Level of Service (LOS) Improvement – LOS serves as a measure of a road's performance/congestion level that utilizes a grading scale wherein a LOS of "A" represents no congestion and LOS "F" represents severe congestion. LOS utilized in this criteria will be obtain from the Indiana Statewide Travel Demand Model output based on the 2000 Highway Capacity Manual procedure for calculating LOS at the planning level. Two model outputs will be utilized: a future year 2030 network output. and a 2030 full project build output. Projects are assigned points based on the improvement in the LOS. For example, LOS improvements from an LOS "F" (score of 0) to a LOS "C" (score of 3) were awarded a 3 (3-0=3) out of a possible 5 points (See **Table 11-3**)

Forecasted LOS Improvement	Points
LOS A	5
LOS B	4
LOS C	3
LOS D	2
LOS E	1
LOS F	0

Table 11 - 3

Roadway System Importance

Roads are classified according to their importance in providing connectivity and the functions they provide. The basic principal involved in classifying roads is that roads serve two distinct functions: mobility (the movement of goods and people) and access to land. For the purpose of scoring, projects are assigned points based on three roadway classification schemes: functional classification, statewide mobility, being part of the National Highway System or being an intermodal connector. Listed below is a description of each classification scheme and points assigned. A maximum of 5 points can be assigned for this category. (See **Table 11 - 4**)

Highway Classification	Points
Interstate	5
National Highway System	4
Statewide Mobility Corridor	3
Regional Mobility Corridor	2
Freeway/Expressway	2
Principal Arterial	2
Minor Arterial/Collector	1
Intermodal Connector	1
Local Access Corridor	0

Table 11 - 4

1. Functional Classification – Functional classification provides a system for grouping routes by the character of the service they provide, be it either for the goal of access to property or for mobility. This grouping determines the geometric characteristics of facilities. Higher functional classification facilities such as interstates, freeways, and principal arterials will receive higher scores in this subsection.
2. Mobility Corridors – For planning purposes INDOT has developed a simplified 3-level corridor classification scheme discussed in detail below.

- *Statewide Mobility Corridors* – These corridors are the top-end of the highway system and are meant to provide mobility across the state. They provide safe, free flowing, high-speed connections between the metropolitan areas of the state and surrounding states. They serve as the freight arteries of the state and are thus vital for economic development.
- *Regional Corridors* -- These corridors provide mobility within regions of the state. They provide safe, high-speed connections.
- *Local Access Corridors* - These corridors make up the remainder of highway system. They are the bottom level of system and are used for lower speed travel, and providing access between locations of short distances (10-15 miles). For the purpose of prioritization, local access corridors receive a low priority rankings and points.

3. National Highway System - The National Highway System (NHS) is a system of highways determined to have the greatest national importance to transportation, commerce and defense

Project Priority

In the evaluation of the long-range plan scoring, the lack of data that prevented the application of the full Major Moves scoring process for issues such as economic development and customer input resulted in the over-emphasis on congestion relief and system importance. This resulted in projects with higher traffic volumes, significant congestion, location on a National Highway System or Interstate route receiving a disproportionate share of the higher project scores. To compensate for the issues on which data was lacking, a project priority index was created. Each long-range planning district liaison evaluated and assigned a score to each project based upon project priority.

Project Priority	Points
Committed (Major Moves Project)	4
High Support (not to exceed 10%)	3
Moderate Support	2
Low Support (not to exceed 10%)	1

Table 11 - 5

Future Cost Estimating Procedures

In 2005 INDOT began development of a system planning cost estimation spreadsheet tool to improve the accuracy and level of confidence for cost estimation in planning studies. The cost estimation system was intended to provide a consistent and up to date process for costing projects. The process is based upon research funded by the Federal Highway Administration (FHWA) for the continued development of the Highway Economic Requirements System (HERS). The cost data used by the system is based upon actual contracts for over 2,300 highway improvements in six states (Indiana, Nebraska, Ohio, Oklahoma, Oregon and Vermont) as contained in the report “Highway Economic Requirements System Improvement Cost and Pavement Life—Final Report 2003). The cost estimation spreadsheet produces costs in 2002 dollars. The cost estimation spreadsheet and user documentation has been supplied to all INDOT District Planning Offices and all MPOs. In addition, the cost estimation process was presented at the 2006 Annual MPO Conference.

For projects in the 2016 to 2030 time frame, the costing process used the INDOT cost estimation spreadsheet to estimate 2002 total cost. A 25% cost increase was applied to the 2002 costs to bring them up to 2006. An additional 11% was added to bring the cost to 2007. The remaining years were estimated at 3.5% per year until the year of construction.

Long Range Fiscal Forecasting for Program Phasing

In the development of the long-range plan, five implementation periods were considered. For the first two implementation periods the Major Moves Program covers 2006 to 2010 and 2011 to 2015. The Major Moves Program as discussed in Chapter 10 Major Moves Program and Project Scoring Process is based upon the large infusion of revenues from the leasing of the Indiana Toll Road. This funding allows for the elimination of the 2006 to 2015 funding gap and the advancement of the Major Moves Program of capital improvements. However after 2015 the development of highway improvements will no longer have these additional resources and need to rely upon more traditional funding sources and future innovative financing programs.

The long-range fiscal forecasts were developed for the balance of the 2030 planning period for the three implementation periods of 2016 to 2020, 2021 to 2025 and 2026 to 2030.

INDOT Historical Funding Trends

The INDOT historical spending on construction contracts is shown below in **Figure 11-1** for the 1987 to 2006 time frame. During this analysis period a number of funding initiatives were developed including bonding programs and successful efforts for Indiana to have more federal gas tax collections returned to the state and reduce its role as a "donor" state in the federal reauthorization legislation. Over this period spending and the support revenues have increased at an approximate 5.8% annual growth rate.

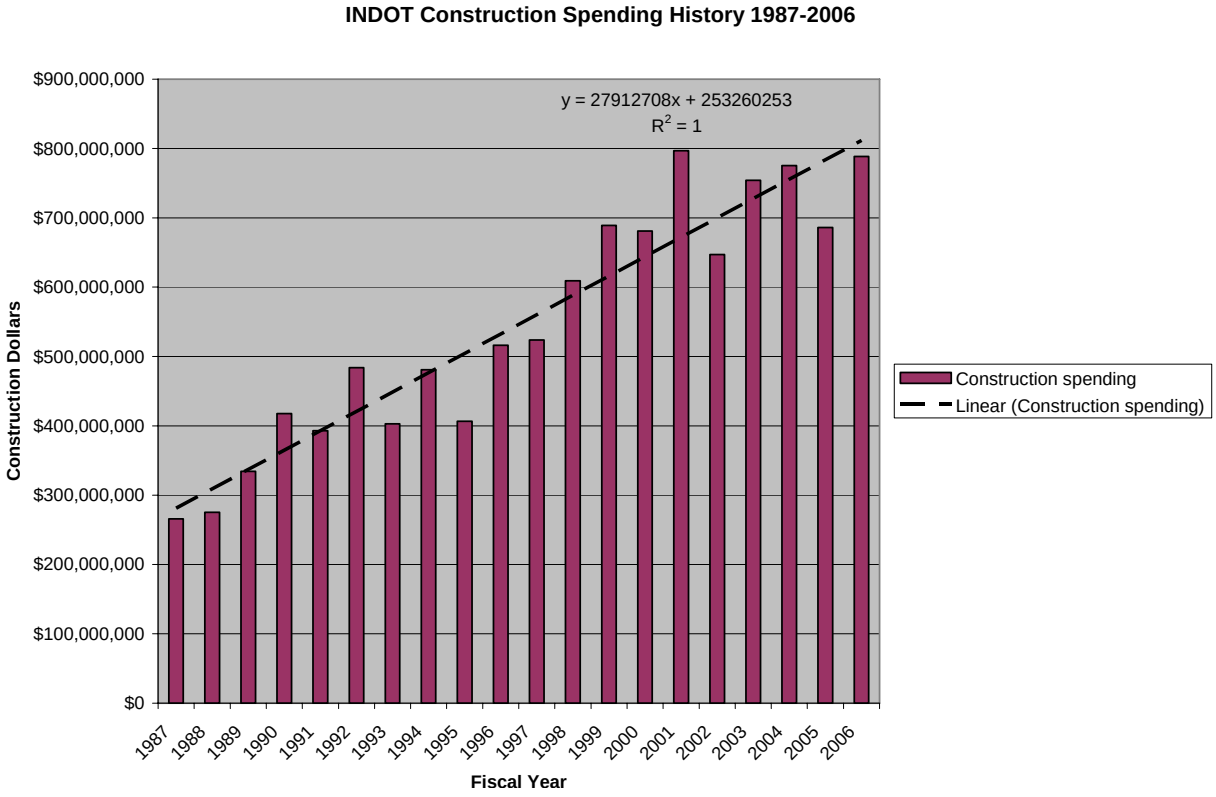

Figure 11 - 1

To forecast revenues for the 2016 to 2030 time period the INDOT Fiscal Section under the supervision of the Chief Financial Officer developed a fiscal forecast. Key assumptions were that state revenues including the state highway fund would increase at a 1% growth rate, federal revenues at a 6% annual increase and earmarks at a 1% increase. Preservation funding is forecasted to increase by 3% annually. See **Figure 11-2**

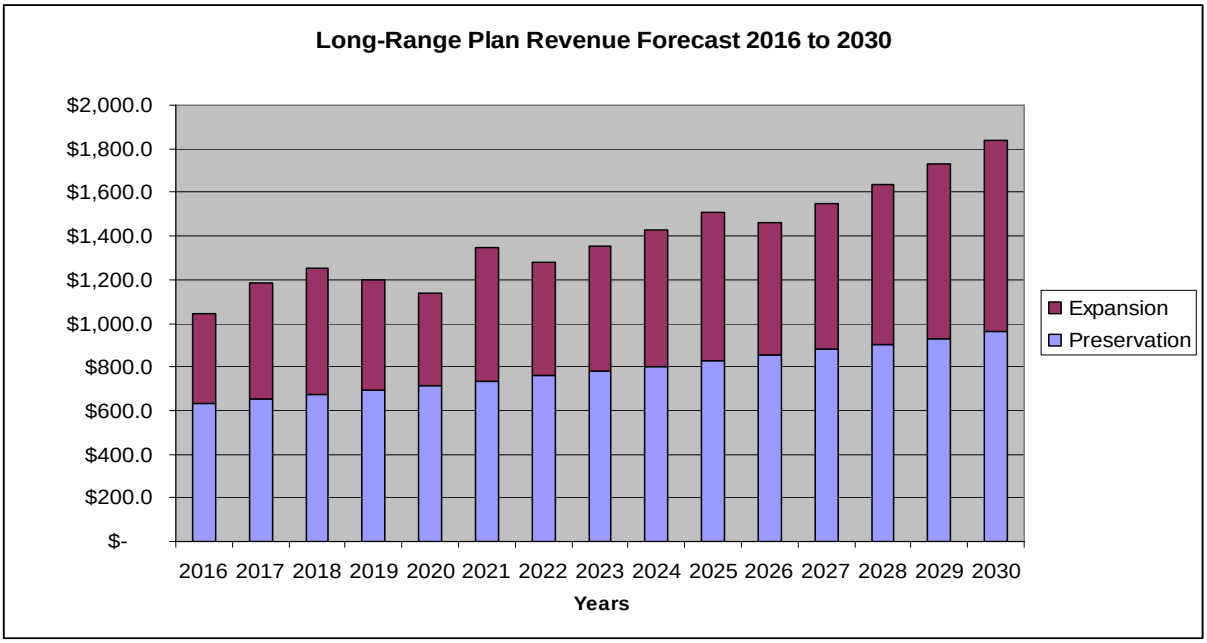

Figure 11 - 2

The resulting 2016 to 2030 fiscal forecast was developed in nominal dollars aggregated into the five year implementation periods as shown below in **Table 11 - 6.**

Long Range Plan Fiscal Forecast 2016 to 2030 (in millions of dollars)			
Implementation Period	Preservation	Expansion	Total
2016 to 2020	$3,371	$2,859	$6,230
2021 to 2025	$3,907	$2,274	$6,181
2026 to 2030	$4,530	$4,314	$8,844

Table 11 - 6

It should also be noted that a significant portion of the expansion projects include highway preservation activities in the form of pavement replacement on existing highway segments where added travel lanes are being implemented. For example, for a recommended interstate added travel lane improvement to widen the roadway from four to six lanes, the cost of replacing the existing four lanes of pavement is counted as an added capacity cost in addition to the two "new" lanes which provide for the added capacity. This practice results in the actual investment in preservation activities being under estimated and expansion activities being overestimated.

The actual operating and maintenance costs for the state jurisdictional highway system were analyzed for each INDOT District and the estimated costs for the MPO areas (**Table 11 – 9)**. The following table represents average annual maintenance costs (based on previous five years) by INDOT District and Sub-District.

For example, based on the last 5 years, a sub-district in the Crawfordsville District spends over $2.9 million on maintenance per year. Similarly, a sub-district in the Fort Wayne District spends over $2.6 million.

District	Average expenditure for each sub-district	District cost
Crawfordsville	$ 2,918,602.27	$ 14,593,011.34
Ft. Wayne	$ 2,655,804.43	$ 15,413,266.07
Greenfield	$ 3,748,079.15	$ 18,740,395.75
LaPorte	$ 3,234,748.75	$ 18,458,149.75
Seymour	$ 3,471,079.87	$ 16,987,359.69
Vincennes	$ 2,310,648.36	$ 11,208,835.33

Table 11 – 7

Using estimates of Lane Miles by District, the following table shows the Cost per Lane Mile by District.

District	Average expenditure for each sub-district	District cost	Estimated # of Lane Miles	Cost per lane mile
Crawfordsville	$2,918,602.27	$14,593,011.34	4,780.90	$3,052.36
Ft. Wayne	$2,655,804.43	$15,413,266.07	4,631.32	$3,328.05
Greenfield	$3,748,079.15	$18,740,395.75	4,365.69	$4,292.65
LaPorte	$3,234,748.75	$18,458,149.75	4,832.12	$3,819.89
Seymour	$3,471,079.87	$16,987,359.69	4,751.94	$3,574.83
Vincennes	$2,310,648.36	$11,208,835.33	4,376.85	$2,560.94

Table 11 – 8

MPO	O&M Costs
Evansville	$1,075,516.59
Terre Haute	$1,018,485.98
Bloomington	$147,871.59
Indianapolis	$4,096,883.18
Northwest Indiana	$4,936,003.08
Lafayette	$1,265,825.74
Kokomo	$377,468.01
South Bend/Elkhart	$2,718,612.17
Louisville	$1,306,566.71
Columbus	$1,173,812.89
Cincinnati	$764,754.64
Anderson	$1,751,735.55
Muncie	$730,520.70
Fort Wayne	$887,029.80

Table 11 – 9

Identification of Funding Projects by Implementation Period

Projects have been assigned to the funding periods based on business rules whereby the first two funding periods (2006 – 2015) were exclusively filled with projects from the Major Moves Program. Major Moves projects are committed projects. New projects for the 2016 to 2030 time frame were assigned to the program based on 80/20% funding split whereby 80% of the available new funding was dedicated to the

interstate program and 20% was reserved for non-interstate projects. This funding split was based upon guidance from senior INDOT staff responsible for Program Development.

Time Frame	Total Funding	80% for Interstates	20% for Non-Interstates
2016 – 2020	$2.859 billion	$2.287 billion	$571 million
2021 – 2025	$2.274 billion	$1.819 billion	$455 million
2026 – 2030	$4.314 billion	$3.451 billion	$863 million

Table 11 – 10

The projects were then assigned based on their respective scores and the budgeted fiscal revenue forecast for that implementation period. Where projects' tied in score, AADT was used to break the tie. Projects were assigned to the third (2016 to 2020), fourth (2021 – 2025) and fifth (2026 – 2030) funding periods according to score and budget availability. When the allocated funds budgeted to an implementation period/funding period were exhausted, the process would move into the next funding period. When all funding periods were filled, the remaining projects were moved to the unfunded list. Those projects that did not score well enough to be included in the fiscally constrained side of the plan will continue to be listed in the plan but they will be included in a new illustrative or unfunded section of the plan. These projects can be moved back to the fiscally constrained side of the plan should future additional revenues be identified. Should this occur, projects will be assigned again in accordance with the established business rules.

Innovative Finance

A new section of the plan provides for innovative finance. The innovative finance section is made up of new approaches to developing funding for major infrastructure projects. It involves non-traditional funding sources such as toll financing (for roadways other than I-69 Indianapolis to Evansville), public private partnership arrangements, application of new technologies to capture new user benefit revenues and innovative financial mechanisms. In the innovative finance projects listing several projects are listed which have toll financing as a option (such as the Illiana Expressway and the Henderson/Evansville Bridge) and the I-69 corridor improvements, in which toll financing is not an option.

The need to develop innovative funding programs to supplement traditional infrastructure revenues is a recognized national need. INDOT is working with FHWA and several coalitions of mid-western states to investigate new approaches. At this point in time program specifics have not been developed. Many of the details will not be known until future national highway funding programs are formulated, such as the upcoming USDOT reauthorization program for the surface transportation program in 2009. The INDOT innovative finance program is not expected to come on line until 2016.

Several of the concepts being investigated provide for the value pricing of benefits such as dedicated truck lanes which could generate revenues from providing trucking and freight companies an increase their productivity. Other programs involve peak hour pricing and the provision of High Occupancy Toll (HOT) lanes to speed commuter travel. The opportunities to implement these types of programs are facilitated by the development of new technology as being implemented in INDOT's Intelligence Transportation System (ITS).

Innovative financial mechanisms can also provide additional revenues for major infrastructure projects. Programs using Grant Anticipation Revenue procedures (such as the GARVEE bonds), procedures using Transportation Infrastructure Finance and Innovation Act (TIFIA) provisions and Multi-State Infrastructure Banks can access future funding streams and leverage both existing and future funding programs.

Long-Range Plan Project Review and Consultation Meetings

A critical input into the planning analysis process was the series of project identification and prioritization meetings held at key points with MPO transportation planners, INDOT District Planning Office personnel, RPO planners and other key stakeholders in the transportation planning and project development process. The 2007 plan update activities began in May 2006 with a formal request to the Metropolitan Planning Organizations (MPOs), Regional Planning Organizations (RPOs) and the INDOT District development offices to review long-range plan projects from the 2004 plan update and preliminary scoring of the long-range plan project based upon congestion relief and system importance criteria. The process has included eighteen meetings with the MPOs, RPOs and District Planning offices to review the preliminary identification of projects and related scoring. Meeting notes from these meetings have been placed on the INDOT 2007 plan update web site. In August 2006, six open-house District meetings were conducted in which the long-range planning section provided preliminary project listings and preliminary project scoring for stakeholder and public review.

In January 2007 the final recommended long range plan projects and scoring were distributed to the MPOs and the INDOT District development offices for additional review and comment. Another series of plan review meetings were conducted with MPO and District staff to review these recommendations. In May of 2007 the 2007 long-range plan update was presented at the six open-house District meetings. Maps of long-range plan projects and an executive summary of the plan document were distributed for review and comment. During the plan update process, information on the analysis of needs and recommended improvements were provided to transportation stakeholders via the 2007 Plan Update website located at: *http://www.in.gov/dot/div/planning/lrp/2007plan.htm.*

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